

August 10, 2000


Michael Buckley, Director
Flood Hazard Mapping Technical Services Division
Federal Emergency Management Agency
500 C Street SW
Washington, DC 20472

Dear Director Buckley,

I talked with Patrick Bresnahan, the GIS coordinator for Richland County, and he informs me that ground elevation data from Richland County's comprehensive aerial survey will be available from their vendor in three weeks. He anticipates taking additional time (2-3 weeks) to process the data, but the timetable for having the data available for public use has apparently been accelerated greatly. Richland County is currently processing vendor data related to canopy and construction elevations.

Since the elevation data you are currently using has never been verified (and opportunities for verification have been actively denied), I would encourage you to contact Patrick Bresnahan and take this opportunity to confirm the elevation data before proceeding further. It would be unfortunate if the validity of your analysis was immediately called into question by poor-quality elevation data when much better quality data was available in a timely fashion. For my part, I am preparing HEC-2 station profiles and the USGS's 1981 data for comparison against the Richland County LIDAR survey data. Please contact me if you have any additional questions on this topic.

Sincerely,


cc: Dr. Paul Sandifer, SC DNR

DESCRIPTION OF RIVER GAUGES, ETC.

CLARKSVILLE, VIRGINIA.

Clarksville, Va., is on the Roanoke River, 65 miles above Weldon, N.C. The width of river at low water is 1,260 feet. The drainage area above the station is 6,900 square miles. The river gauge is on the south side of river; it is made of 2 by 10 inch plank, and graduated with copper tacks and figures. It is attached to a tree leaning over the river. Graduation is from 3 feet below to 23 above zero. Tradition gives a high water of 27 feet on November 27, 1877. Highest water recorded was 13.5 feet on September 14, 1893; lowest, -0.2, on July 19, 1894. Danger line is at 12 feet.

CLINTON, TENNESSEE.

Clinton, Tenn., is on the Clinch River, 46 miles above its mouth at Kingston, Tenn. The width of river at low water is 282 feet. The drainage area above the station is 2,750 square miles. The river gauge is attached to the middle pier of the Southern Railroad bridge over the Clinch River. It is made of heart pine, 4 by 10 inches, in two sections, the first from zero to 5 feet, and the second from 5 to 48 feet; it is painted white and graduated in copper tacks. The base of rail on bridge is 57.66 feet above zero of gauge. Graduation is from zero to 48 feet above zero. Highest water was 45 feet on March 31, 1886; lowest, 0.0, on December 4-8, 1883. Danger line is at 25 feet.

COLBERT, INDIAN TERRITORY.

Colbert, Ind. T., is on the Red River, 115 miles above Arthur City, Tex. The width of the river at low water is 225 feet. The drainage area above the station is 37,500 square miles. The base of rail on bridge is 44 feet above zero of gauge. Highest water was 18 feet, date unknown. Danger line is at 14 feet. Station was discontinued September 15, 1893.

COLUMBIA, SOUTH CAROLINA.

Columbia, S. C., is at the head of the Congaree River, 37 miles above its confluence with the Wateree. The distance to St. Stephens, on the Santee, is 102 miles. The drainage area above the station is 7,300 square miles.

The river gauge is painted on the first stone pier (from the eastern shore) of the Gervais street toll bridge.

Bench mark is track of the South Carolina and Georgia Railroad at Union depot. Its elevation is 102.59 feet above zero of gauge.

Graduation is from zero to 26.6 feet above zero. Highest water was 34.4 feet in September, 1852; lowest, -0.4, on January 20, 1893. Danger line is at 15 feet.

COLUMBIA, TENNESSEE.

Columbia, Tenn., is on the Duck River, 66 miles above its mouth and 76 miles above Johnsonville, Tenn., on the Tennessee River. The width of river at low water is 150 feet.

The drainage area above the station is 1,100 square miles.

The river gauge is on the downstream end of the south pier of the Columbia and Nashville Turnpike Company's bridge over Duck River. It was rebuilt in 1891 by the Weather Bureau, and consists of a 10-inch board bolted to the pier.

Bench mark is top of step at south entrance of courthouse, and is 87.4 feet above zero of gauge.

Graduation extends 43 feet above zero. Highest water was 33.1 feet on March 9, 1891; lowest, -0.4, date unknown. Danger line is at 23 feet.

DESCRIPTION OF RIVER GAGES, ETC.

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CLINTON, TENN.

The river gage is attached to the south side of the middle pier of the Southern Railway bridge over the Clinch River. It is made of 4 by 10 inch heart pine, painted white, and graduated with copper tacks. Graduation extends from zero to 48 feet above.

B. M., top of rail in front of Southern Railway depot, is 62.6 feet above zero of the gage and 833.2 feet above mean sea level. B. M., base of rail on bridge above gage, is 57.7 feet above zero of the gage and 828.3 feet above mean sea level.

B. M., on Southern Railway bridge over Clinch River, on north bridge head on east side, on top surface of large stone supporting trestle work, 5 inches from south and 5 inches from east edge of stone; bottom of square hole cut in stone, lettered "U. S. B. M." (C. & G. S. Q.), is 61.1 feet above zero of the gage and 831.7 feet above mean sea level.

COCHRANE, ALA.

The river gage is located on the piers of the bridge of the Alabama, Tennessee & Northern Railroad Co. over the Tombigbee River, and is in two sections. The first section (-1 to 8 feet) is bolted to the southeast side of the iron cofferdam of the middle pier, and is made of 2 by 10 inch heart pine, painted white, with graduations burnt into the wood and painted black. The second section (8 to 47 feet) consists of black graduations painted on a 12-inch white surface on the southwest side of the south concrete pier. Graduation extends from 1 foot below to 47 feet above zero.

B. M., top surface of middle pier and top surface of projection at upper end of south pier of above-mentioned bridge, are 47 feet above zero of the gage and 146.8 feet above mean sea level.

COLFAX, CAL.

The river gage, which belongs to the United States Geological Survey, is located on the left bank of the river, 50 feet above the Pacific Gas & Electric Co.'s dam, and is in three sections. It is made of 1 by 4 inch lumber, smoothed on one side, and bolted to 4 by 4 inch redwood supports. The first section (0.0 to 6.4 feet) is bolted to a rock; the second section (6.4 to 12.4 feet) is driven into the ground and supported by a tree; and the third section (12.4 to 16.0 feet) is bolted to a tree. The smoothed surface is painted white, with graduations and figures cut into the wood and painted black. Graduation extends from zero to 16 feet above.

B. M., U. S. G. S., crest of dam of Pacific Gas & Electric Co., marked 1,965 feet, is 5.2 feet above zero of the gage, and 1,965 feet above mean sea level.

COLGATE (P. O., DOBBINS), CAL.

The river gage consists of two vertical sections. The first section (-2 to 5 feet) is fastened to a rock near the left bank of the river. It is made of 4 by 6 inch black-oak timber, painted white, with graduations cut into the wood and painted black. The second section (5 to 20 feet) is attached with steel expansion bolts to the concrete wall of the power house, opposite the first section. The first section is made of heavy pine timber and the second is a 2 by 10 inch hard-pine plank. Both sections are painted white, with graduations cut into the wood and painted black. Graduation extends from 2 feet below to 20 feet above zero.

B. M., mark cut in southwest wall of power house of California Gas & Electric Co., is 18 feet above zero of the gage.

COLUMBIA, MISS.

The river gage is attached to the downstream side of the log boom of the Marion Lumber Co., 25 feet from the east bank of the river. It is made of 2 by 12 inch timber, painted white with graduations of brass figures and copper tacks. Graduation extends from zero to 30 feet above.

B. M., top of boom to which gage is attached, is 29 feet above zero of the gage and 110 feet above mean sea level. B. M., top of steel casing on southeast side of center pier of Marion County steel highway bridge over Pearl River, 2 miles south of Columbia, is 29 feet above zero of the gage and 110 feet above mean sea level.

COLUMBIA, S. C.

The river gage is a chain and weight gage, and is located on the Gervais Street highway bridge, near the fourth pier from the east side. There is also a brass gage of the Weather Bureau pattern attached to the third pier from the east side. Distance from marker on chain to lower end of weight, 38.5 feet. Graduation of brass gage extends from 0.4 foot below to 34.7 feet above zero.

B. M., top of rail at main line crossing of Atlantic Coast Line at Gervais Street, is 102.6 feet above zero of the gage and 222 feet above mean sea level. → 119.4' MSL

GAGES

A44.3

NESS ID: 165E8476
 OWNER: USGS
 REPORT TIME: 03:36:00
 INTERVAL: 240
 PARAMETER: HG
 CRITERIA:

TYPE OF TELEMETRY: LARC
 OWNER: NWS
 PHONE NUMBER: 803-791-1126
 INTERVAL: 360
 PARAMETER: HG
 CRITERIA: High limit-10.00
 Low limit-None
 PAYOR & COST OF LINE: NWS
 SENSOR ID:

GAGE TYPE	OWNER	MAINTENANCE	BEGAN	ENDED	LOCATION OF GAGE AND REMARKS
BRASS GAGE	USWB	USWB	<u>10/01/1891</u>	1/01/1927	A Brass river gage was attached to the west face of the 3rd pier from the east end of the Gervais Street bridge. The gage was graduated from -0.4 ft to +35.0 ft.
CHAIN WGT	USWB	USWB	10/01/1891	11/04/1914	Gage located on Gervais Street bridge, near the 4th pier from east end. Graduations on chain from 3 ft below to as many ft as necessary above zero. Gage datum 117.02 ft MSL.
STAFF	USWB	USWB	11/04/1914	10/11/1916	This gage replaced the original chain and weight gage. It was located on the 5th pier from the east abutment and was graduated from 2.0 ft to 10.0 ft. This gage was used during low water only, while the brass gage was used for highest stages.
CHAIN WGT	USWB	USWB	10/11/1916	1/01/1927	Gage installed on east side of 5th pier from east abutment. Chain length 41.82 ft. Gage and bridge dismantled in 1927.
CHAIN WGT	USWB	USWB	1/01/1927	1/18/1928	Gage installed on new concrete highway bridge on Gervais Street about 1000 ft DS from old bridge. There was no interruption to gage readings from previous site. Gage datum unchanged (117.02 ft MSL).
CHAIN WGT	USWB	USWB	1/18/1928	12/01/1934	Gage installed on main rail on Gervais Street bridge about midstream. New chain length 59.02 ft. Gage datum 117.02 ft.
STAFF	USWB	USWB	⁰¹ 2/01/1934		Gage installed at new USWB wellhouse 1000 ft DS from old site. Gage datum lowered to 113.02 ft. Inside gage 0-21.3 ft on wellhouse wall. Outside gage in 4 sections: 0-7 ft, 7-14 ft, 14-31 ft and 31-39 ft all on or near wellhouse structure.
RECORDER	USGS	USGS	10/01/1939	5/01/1961	Gage installed in wellhouse 1000 ft DS from Gervais Street bridge. Gage datum 113.02 ft MSL.
TELEMARK	USWB	USWB	5/01/1961	12/14/1983	Gage installed in wellhouse. Gage attached to recorder and was battery driven with separate float. When telemark was commissioned the observer was released and the staff gage no longer used for daily readings. Converted to AC power 01/01/62.

This info
 is wrong
 for both
 bridges
 are the
 same

LOCATION: COMBARGE RIVER Near COLUMBIA 1 SW SC

ESA: WFO COLUMBIA, SC

DATE: 4/14/2000

WS FORM E-19

LID: COL61

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